



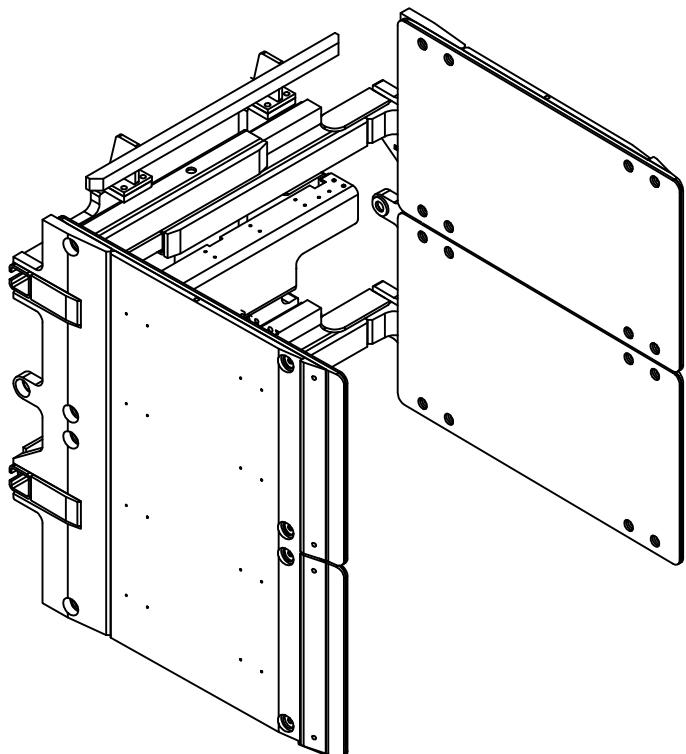
SERVICE MANUAL / PARTS LIST

CONTENTS:

APPLIANCE CLAMP SOFT TOUCH

MODEL #112451

PATENTS PENDING



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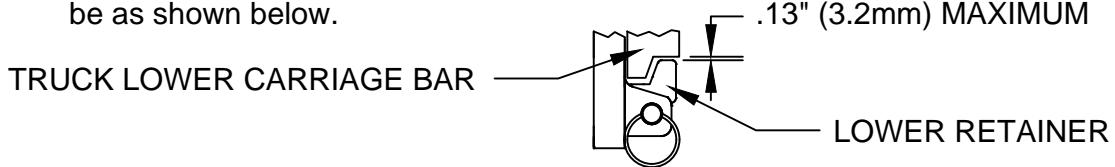
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LIFT TRUCK REQUIREMENTS

<u>CAPACITY</u>	<u>CLAMP HYDRAULICS</u>
Capacity shown on the Clamp name plate is for the Clamp only. The combined truck and Clamp capacity is provided by the lift truck manufacturer.	<p>Recommended Truck Pressure: 2300 to 2500 PSI (159 to 170 bar)</p> <p>Hydraulic fluid: petroleum based hydraulic fluid only</p> <p>Hydraulic supply group: includes hoses and take-up - one set for each function</p> <p>Auxiliary valve: 2 Function (Side Shift & Clamp) = a double auxiliary valve</p> <p>Oil Volume Settings: Side Shift = 3 GPM Clamp Open/Close = 7 GPM</p>

GENERAL INSTALLATION PROCEDURES

1. Make sure that the attachment centering lug is completely seated in truck carriage center notch.
2. Clearance between the lower retainers that hold the attachment to the truck lower carriage bar should be as shown below.
— .13" (3.2mm) MAXIMUM



3. Attach truck supply group (take-up) to clamp valve on attachment base.
4. Standing clear of the Clamp attachment cycle the attachment in and out several times. Use caution because partially filled hydraulic lines may cause erratic movement.

GENERAL INSPECTION AND MAINTENANCE

1. Check all hydraulic fittings, hoses, cylinders and valves for leakages - repair or replace as required
2. Check bladder/water pressure. If out of operating range adjust as required using Loron Pneumatic Fluid Pump #112909. Check clamp force and adjust. (See page 15.)
- 3.
4. Time Schedule: Check pressure and clamp forces every 3 weeks.
Water pressure = 4-6 psi Clamp Force = 1400 lbs. Center of bottom pad.
5. All bolts should be checked and tightened as required.
6. Check lower retainer clearance - see item 2 in General Installation Procedures above.

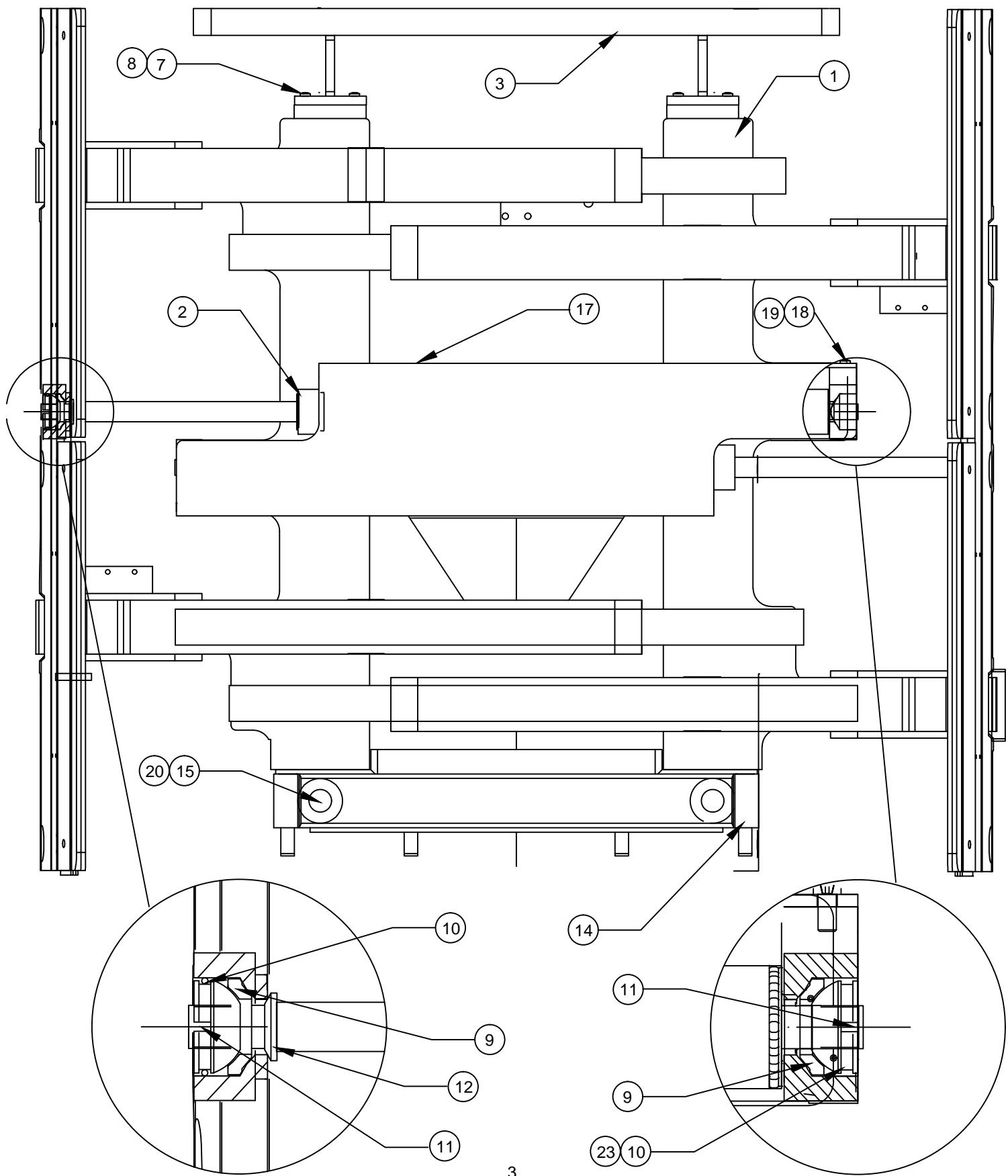
CLAMP ASSEMBLY - 1

Drawing Reference 112683.1

#	QTY	PART #	DESCRIPTION
1	1	112456	FRAME
2	2	111372.4	CYLINDER ASSEMBLY
3	1	111439.2	LOAD BACKREST
4	4	111622.2	SLIDE - FLAT
5	8	111621.2	SLIDE - ANGLE
6	12	109212.5	SHIM
7	8	25G.0832	BOLT LSP
8	8	4E.08	LOCKWASHER LSP
9	4	110730	SPHERICAL SEAT
10	4	110731	SPHERICAL BEARING
11	4	100574.86	COTTER PIN LSP
12	2	111380	CYLINDER WASHER
13	2	107870	LOWER RETAINER
14	1	111423	LOWER LOAD BACKREST
15	2	11G.1028	BOLT LSP
16	12	111619	SLIDE BUTTON
17	1	112468	CYLINDER GUARD
18	4	25G.0608	BOLT LSP
19	4	2F.06	WASHER LSP
20	2	4E.10	LOCK WASHER LSP
21	2	11G.08136	BOLT LSP
22	2	17D.08	ESNA NUT LSP
23	4	100029.314	O-RING LSP

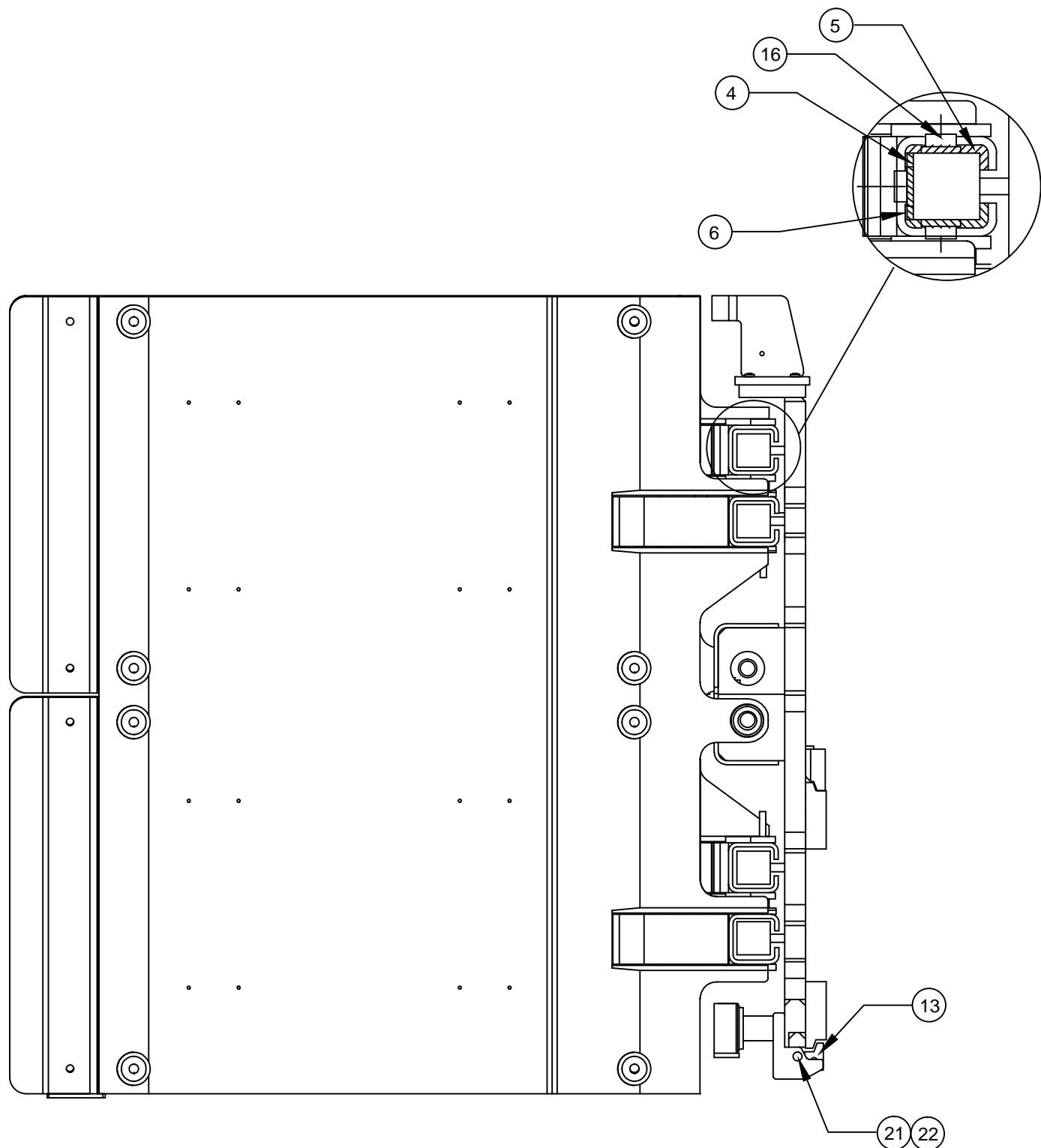
CLAMP ASSEMBLY - 2

Drawing Reference 112683.1



CLAMP ASSEMBLY - 3

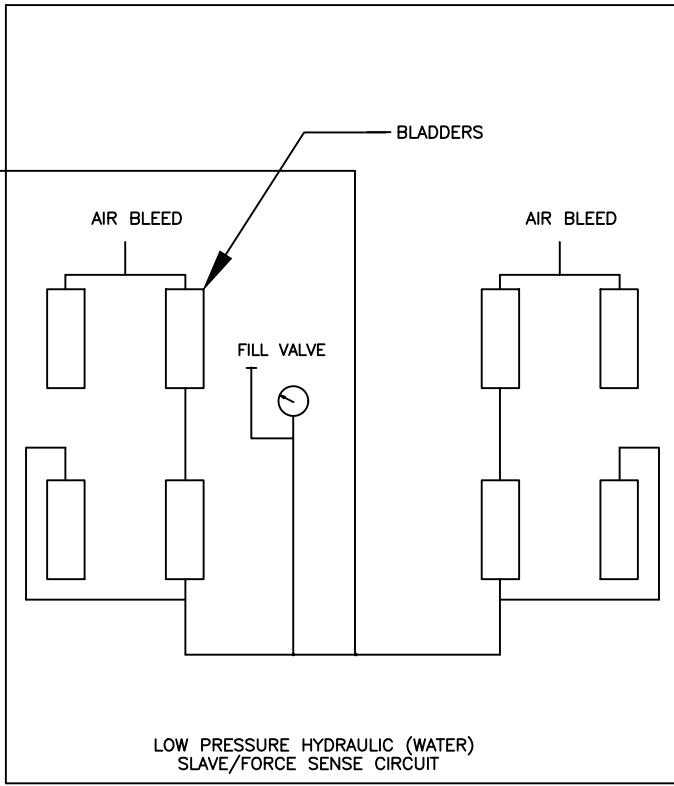
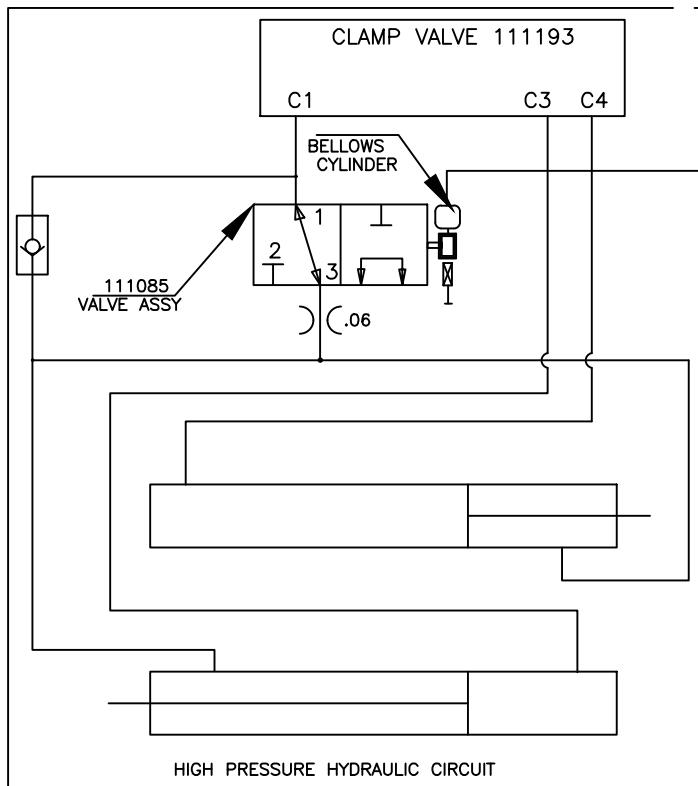
Drawing Reference 112683.1



BLADDER HYDRAULIC ASSEMBLY - 1

Drawing Reference 112875.1

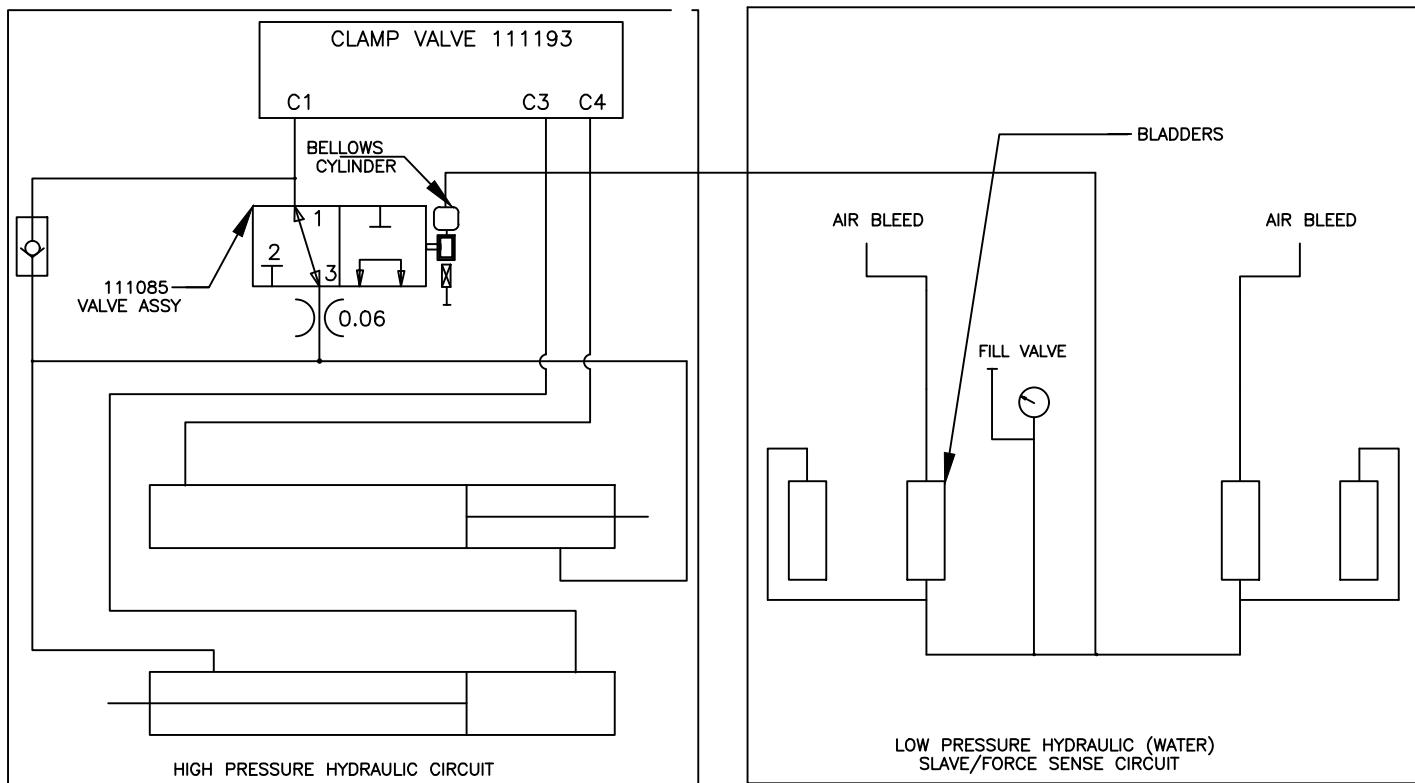
#	QTY	PART NO.	DESCRIPTION	18	2	111290.0250	HOSE
1	3	111350	AIR TANK VALVE	19	8	111030	BLADDER
2	12	111295	HOSE CLAMP	20	32	9G.0412	BOLT LSP
3	1	111290.0025	HOSE	21	16	111471	CLAMP BAR
4	1	111296	PRESSURE GAUGE	22	8	109256	HOSE CLAMP
5	1	111543.01	FITTING 90° ELBOW	23	8	25G.0508	BOLT LSP
6	1	111292	BRANCH TEE	24	2	113026.0360	COVER HOSE
7	1	111290.0178	HOSE	25	4	111128	HOSE GUIDE
8	4	111293	RUN TEE	26	12	25G.0512	BOLT LSP
9	1	111290.0155	HOSE	27	1	111289	PIPE ELBOW
10	1	111290.0175	HOSE	28	2	111654	PLUG
11	1	111290.0805	HOSE	29	2	111510	SPRING
12	1	111290.0960	HOSE	30	16	111878	.19 GAUGE STAINLESS STEEL WIRE
13	1	111299	HOSE CLIP	31	3	111653	VALVE CAP
14	1	25G.0516	BOLT LSP	32	2	111290.0118	HOSE
15	2	111290.0027	HOSE	33	1	111085	DIRECTIONAL; VALVE ASSEMBLE -REFERENCE-
16	2	111290.0127	HOSE				
17	2	111290.0085	HOSE				



BLADDER HYDRAULIC ASSEMBLY - 1

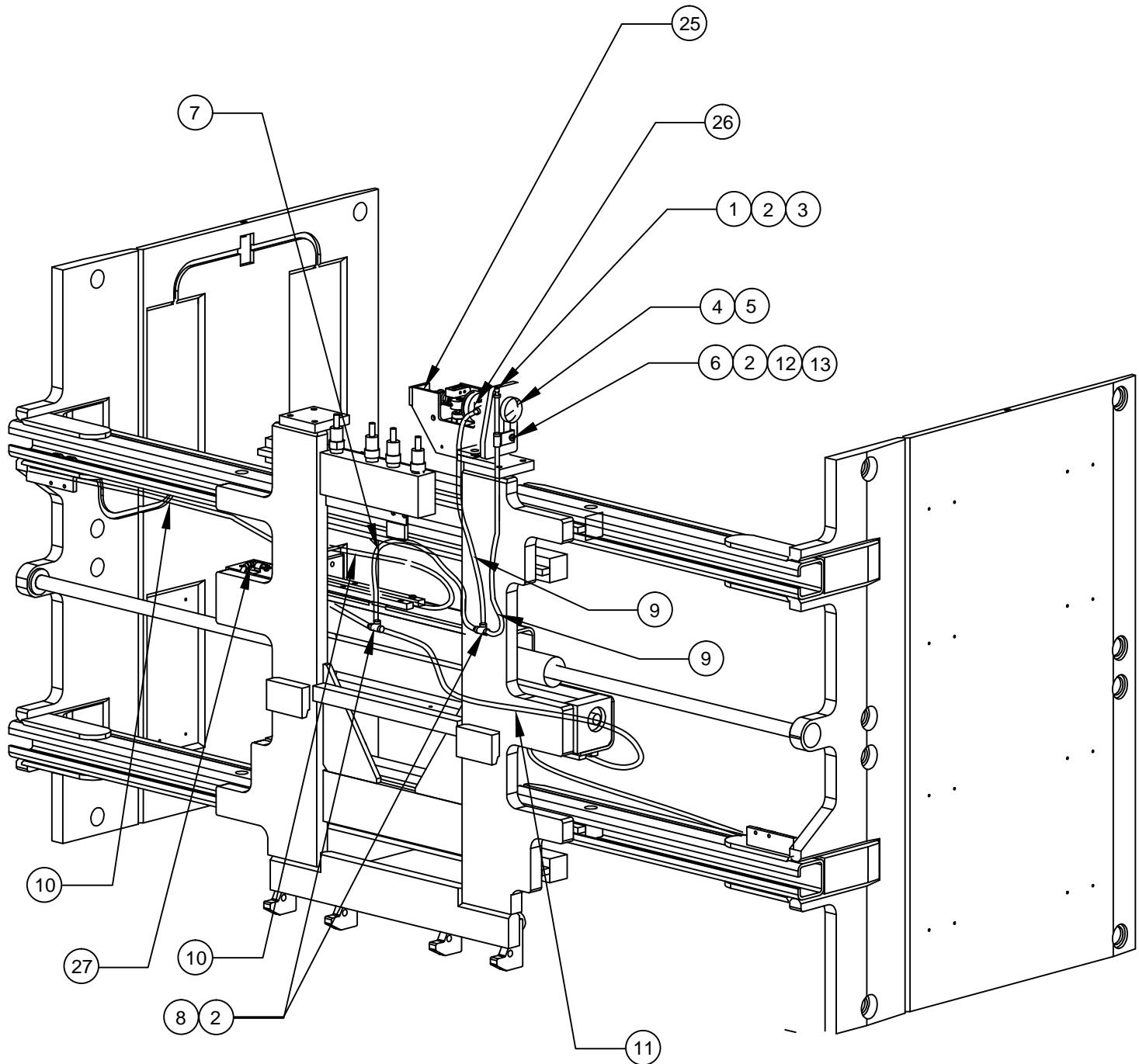
Drawing Reference 112469.1

#	QTY	PART #	DESCRIPTION	17	1	111654	CAP
1	3	111350	AIR TANK VALVE	18	24	9G.0412	BOLT LSP
2	12	111295	HOSE CLAMP	19	8	111471	CLAMP BAR
3	1	111290.0015	HOSE	20	8	109256	HOSE CLAMP
4	1	111296	PRESSURE GAUGE	21	8	25G.0508	BOLT LSP
5	1	111543.01	90° FITTING ELBOW	22	2	113026.0360	COVER HOSE
6	1	111292	BRANCH TEE	23	4	111128	HOSE GUIDE
7	1	111290.0082	HOSE	24	12	25G.0512	BOLT LSP
8	3	111293	RUN TEE	25	1	111085	DIRECTIONAL VALVE ASSEMBLY REFERENCE
9	2	111290.0180	HOSE	26	1	111289	PIPE ELBOW
10	1	111290.1070	HOSE	27	2	111510	SPRING
11	1	111290.0830	HOSE	28	16	111878	19 GAUGE STAINLESS WIRE TIE
12	1	111299	HOSE CLIP	29	2	111290.0277	HOSE
13	1	25G.0516	BOLT LSP	30	8	111971	RUBBER SPRING
14	4	111030	BLADDER	31	8	101633	WASHER
15	1	112470	90° TUBE ELBOW	32	2	111290.0027	HOSE
16	2	111290.0360	HOSE				



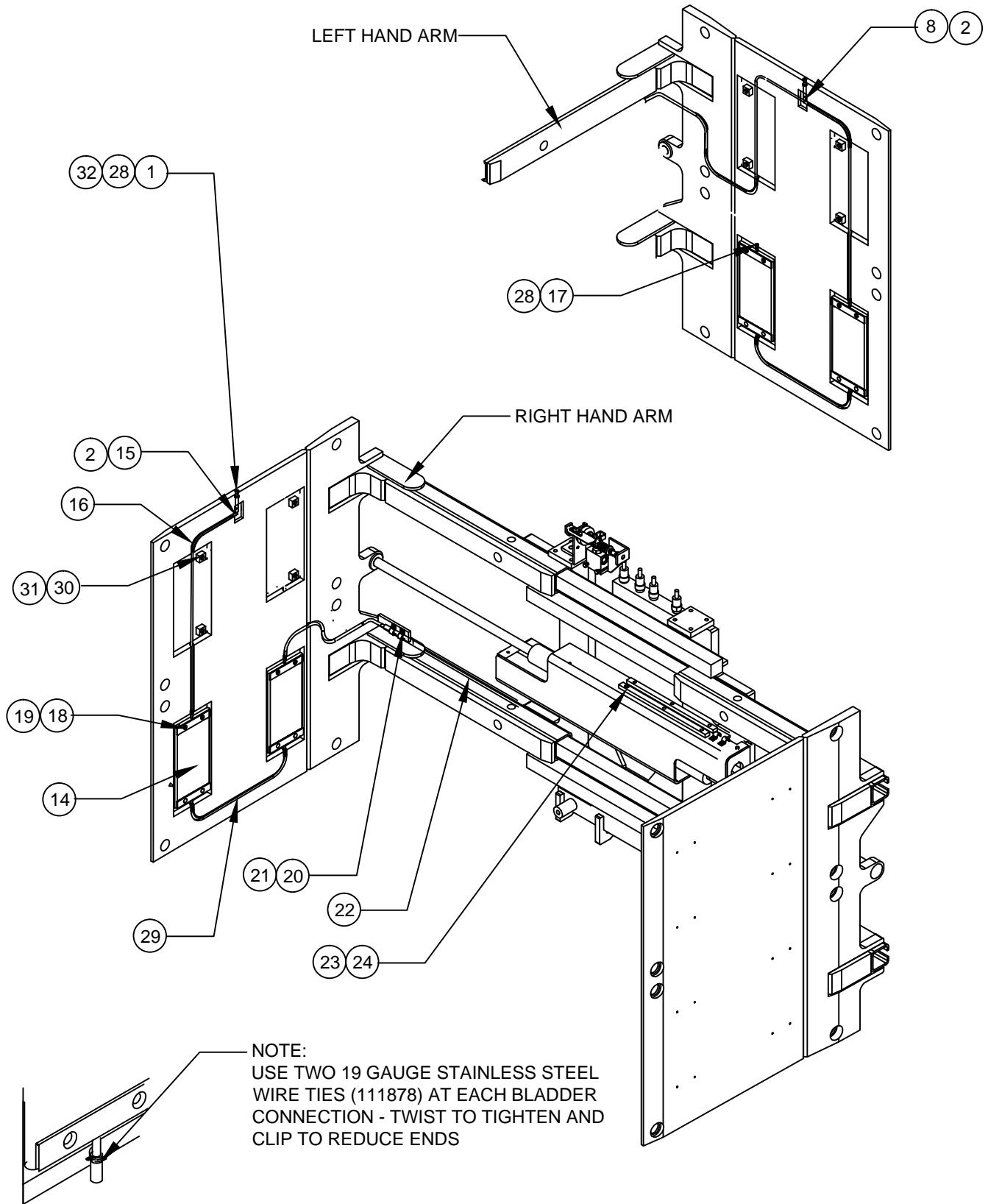
BLADDER HYDRAULIC ASSEMBLY - 2

Drawing Reference 112469.1



BLADDER HYDRAULIC ASSEMBLY - 3

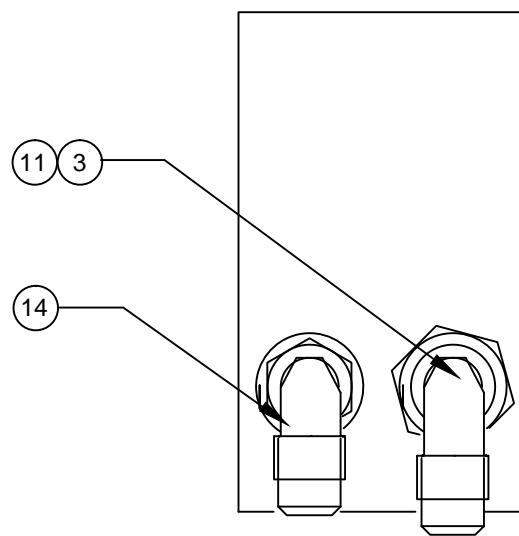
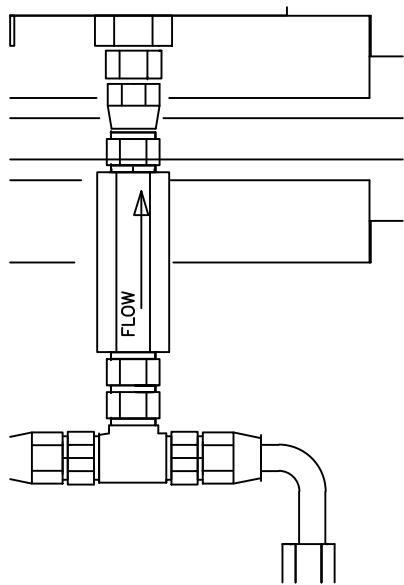
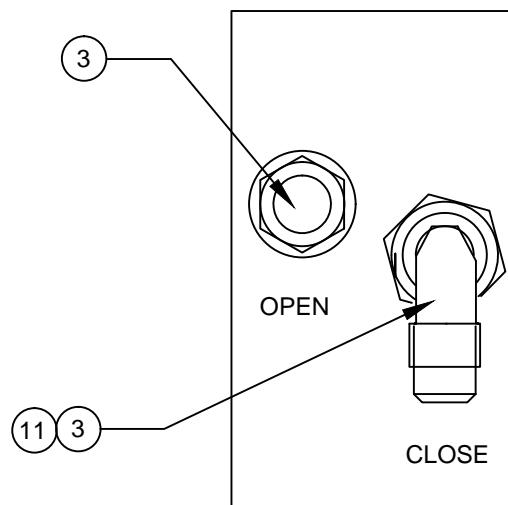
Drawing Reference 112469.1



HYDRAULIC ASSEMBLY - 1

Drawing Reference 112452

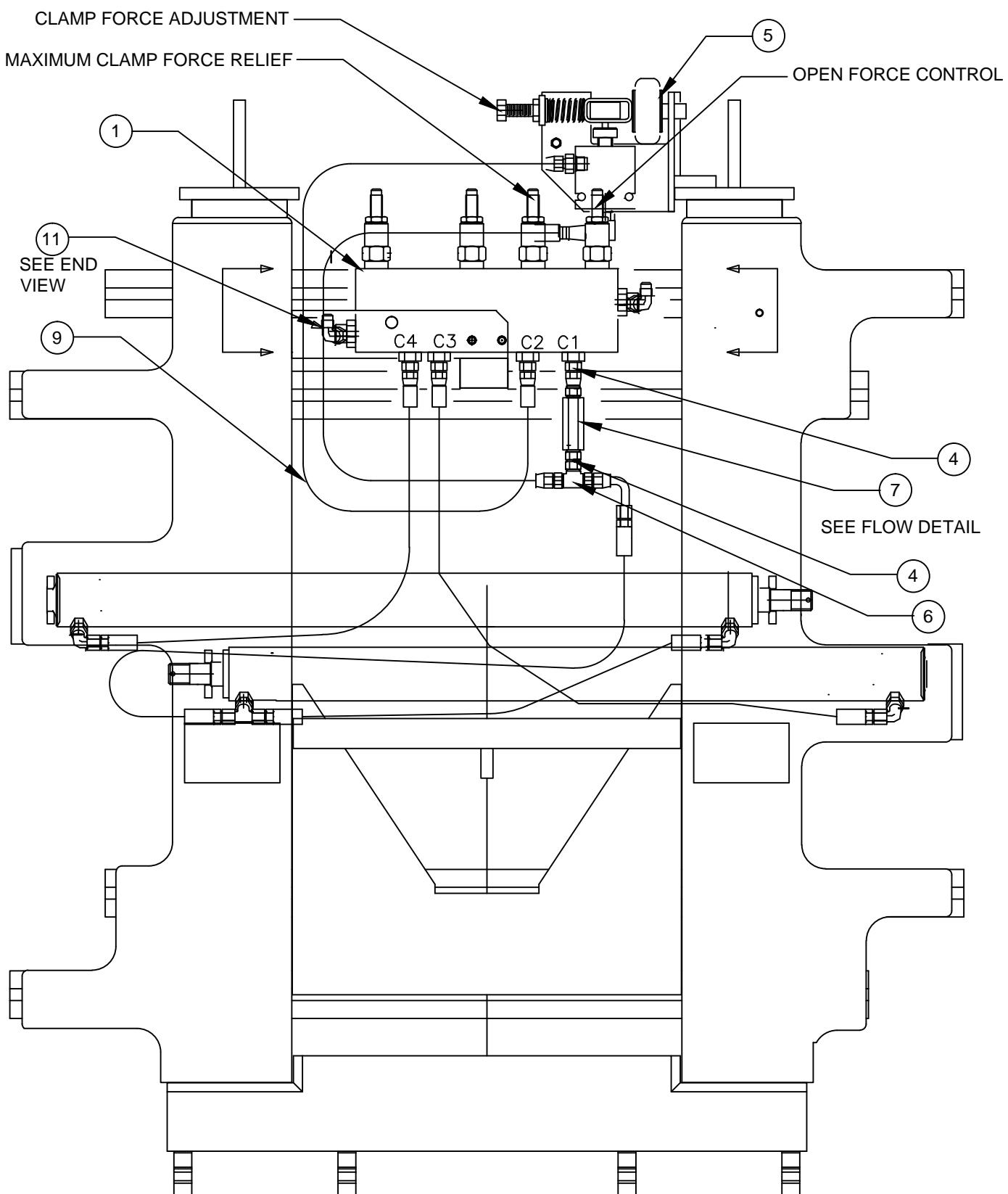
#	QTY	PART #	DESCRIPTION
1	1	111193	CLAMP VALVE
2	2	25G.0524	BUTTON HEAD BOLT LSP
3	7	100676.05	STRAIGHT THREAD ADAPTER O-RING #6-6
4	2	111518.06	FITTING ADAPTER 04 PIPE - 06 JIC STRAIGHT
5	1	111085	DIRECTIONAL VALVE ASSEMBLY
6	1	100227.05	FITTING UNION TEE LSP
7	1	111123	IN-LINE CHECK VALVE
8	1	103411.0380	HOSE ASSEMBLY
9	1	100674.0290	HOSE ASSEMBLY
10	1	100678.05	O-RING TEE BRANCH FITTING #6
11	2	100440.05	90° FITTING-SWIVEL #6JIC
12	1	100674.0300	HOSE ASSEMBLY
13	1	100674.0220	HOSE ASSEMBLY
14	4	100095.05	90° ELBOW FITTING #6 O-RING
15	1	100674.0370	HOSE ASSEMBLY
16	1	100674.0180	HOSE ASSEMBLY
17	1	111514	VALVE GUARD
18	1	100222	FITTING 90° RESTRICTOR
19	1	25G.0520	BUTTON HEAD BOLT
20	1	4F.05	WASHER FLAT
21	1	17D.05	NUT NYLOCK



END VIEW

HYDRAULIC ASSEMBLY - 2

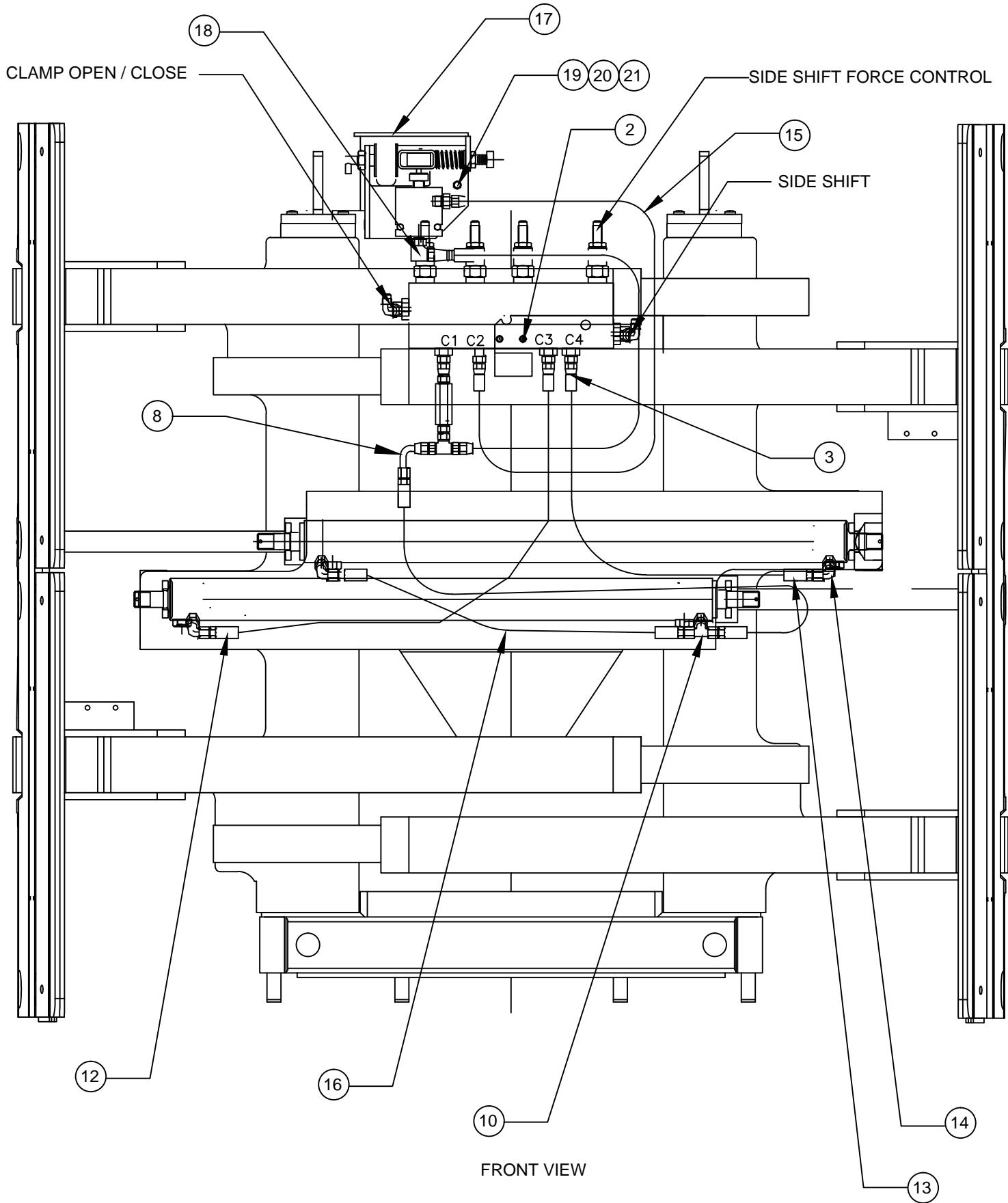
Drawing Reference 112452



BACK VIEW

HYDRAULIC ASSEMBLY - 3

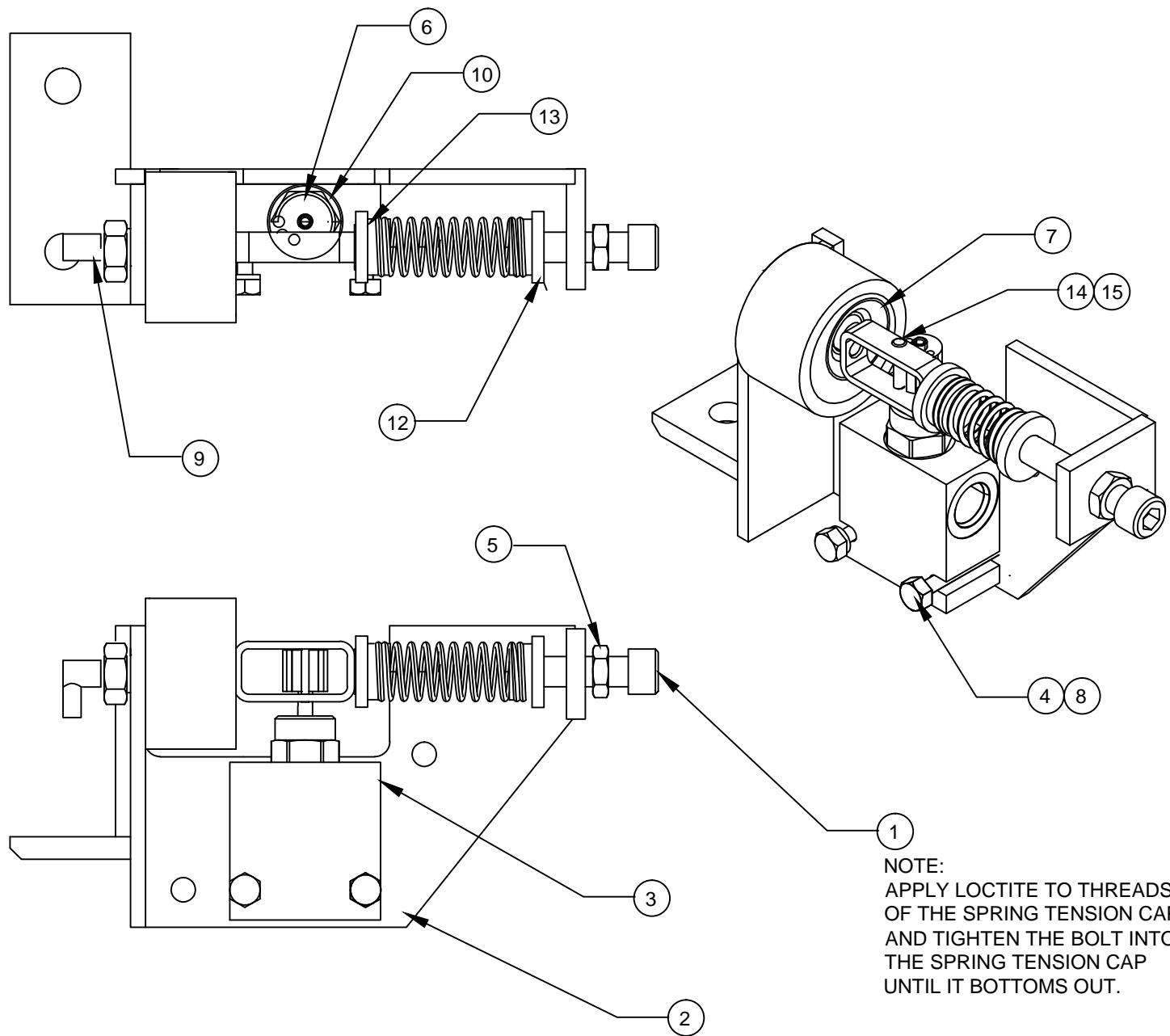
Drawing Reference 112452



CLAMP FORCE CONTROL VALVE

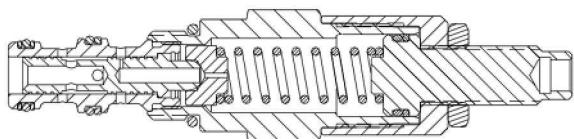
Drawing Reference 111085

#	QTY	PART #	DESCRIPTION	9	1	1D.10	HEX NUT
1	1	11G.0844	BOLT	10	1	111328	WHEEL HOUSING
2	1	111573	MOUNTING PLATE WDMT	11	1	111097	SPRING
3	1	111094	DIRECTIONAL	12	1	111098	SPRING TENSION CAP
4	2	4E.04	LOCKWASHER	13	1	111572	SPRING CAP
5	1	7D.08	JAM NUT	14	1	111655	CLEVIS PIN
6	1	110906	WHEEL	15	1	100574.28	COTTER PIN
7	1	111091	AIR SPRING				
8	2	1C.0424	BOLT				

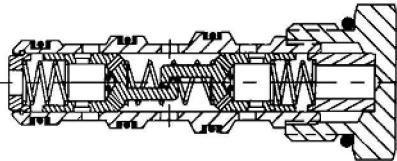


CONTROL VALVE

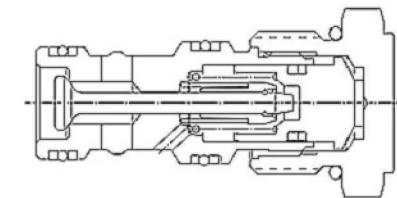
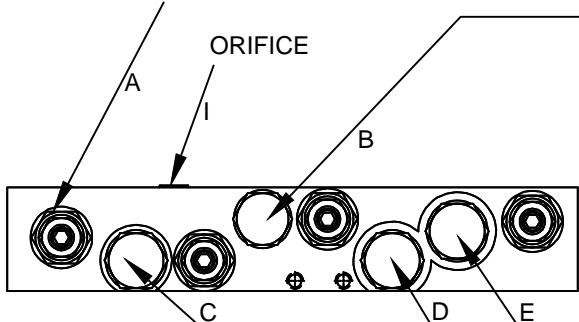
Drawing Reference 111193



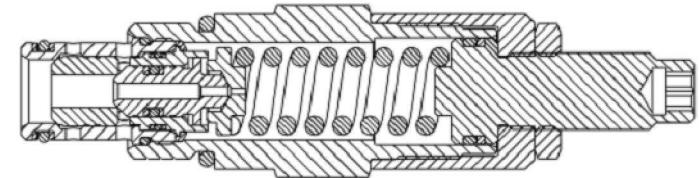
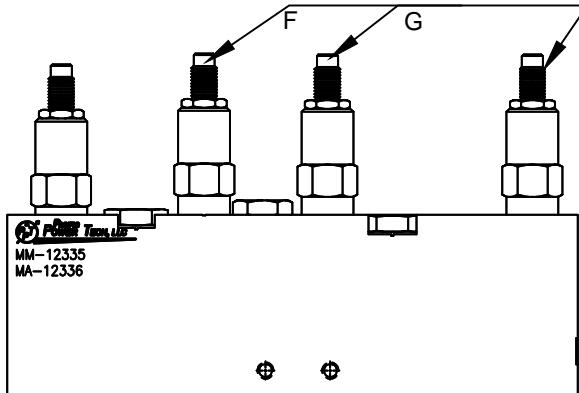
111627 REDUCE/REL. VALVE TORQUE 15-20 FT/LBS
SEAL KIT 112065



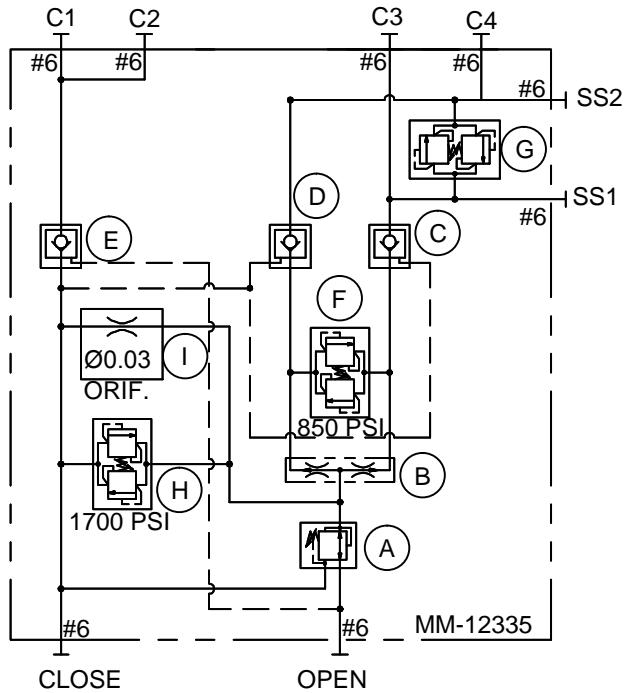
103813 FLOW DIVIDER TORQUE
10-12 FT/LBS 104711 SEAL KIT



111244 CHECK VALVE TORQUE
30-35 FT/LBS SEAL KIT 112059



HYDRAULIC SCHEMATIC



NOTE:

1. Lubricate threads & seals prior to assembly.

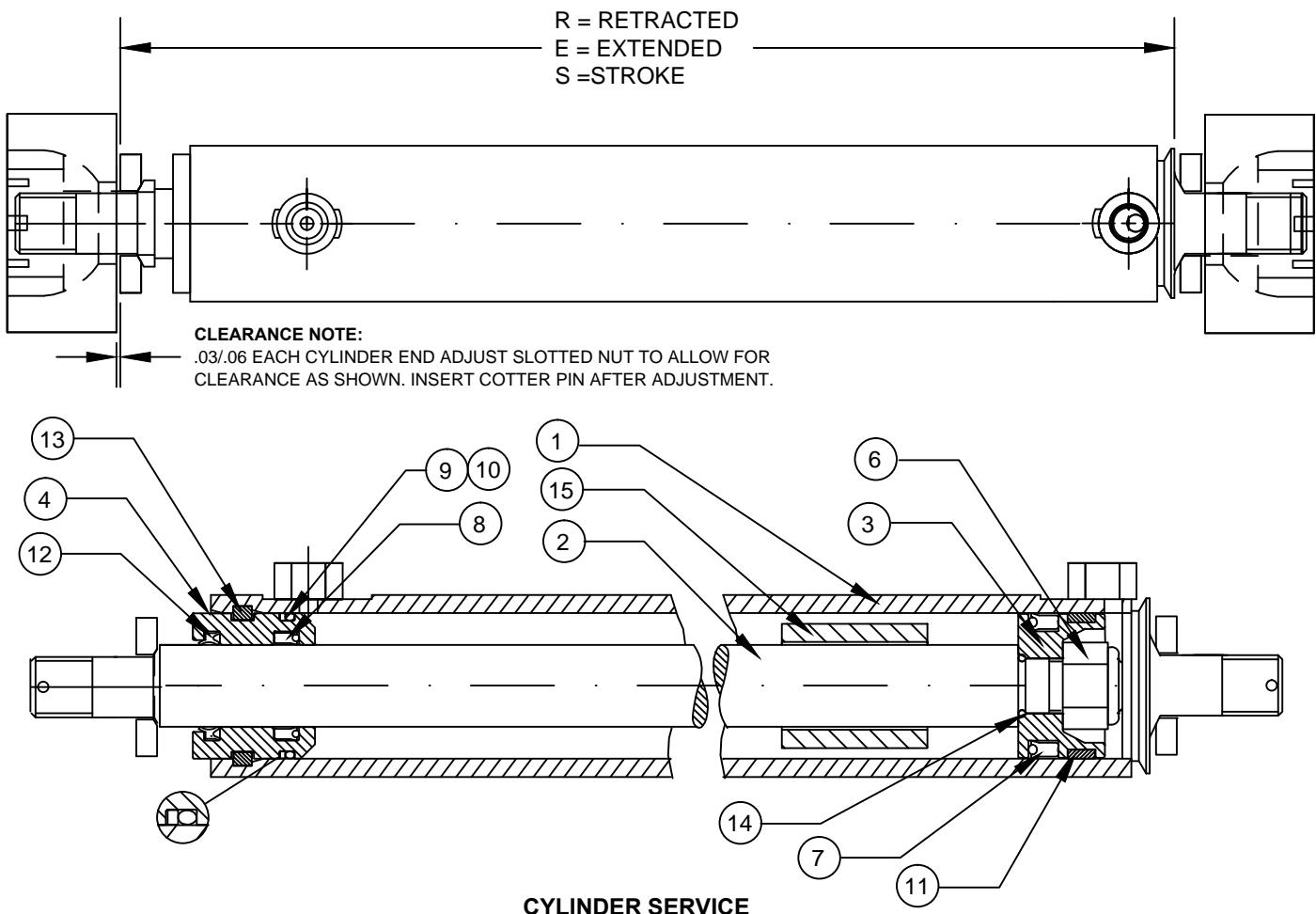
QTY	PART #	DESCRIPTION
1	111627	PRESSURE REDUCE / RELIEF VALVE
1	103813	FLOW DIVIDER
1	112406.2	BI-DIRECTIONAL RELIEF VALVE
2	112406.1	RELIEF VALVE
3	111244	P.O. CHECK CARTRIDGES

CYLINDER ASSEMBLY

Drawing Reference 101251.70

PART #	R	E	S	NET STROKE
101251.70	29.18	52.74	24.50	23.56

#	QTY	PART#	DESCRIPTION	R	1	100028.314	BACK-UP RING LSP
1	1	101257.64	CYLINDER TUBE	10	1	100029.314	O-RING LSP
2	1	100965.112	ROD	11	1	101260	WEAR RING LSP
3	1	101256	PISTON	12	1	101034.6	WIPER LSP
4	1	101254	GLAND	13	1	100027.2	LOCKWIRE
5	1	101261	SEAL KIT(ITEMS 6 THRU 13)	14	1	100029.203	O-RING LSP
6	1	101035	MODIFIED ESNA NUT	15	1	101651.9	SPACER
7	1	100032.095	POLE PAK LSP				
8	1	100031.059	POLY PAK LSP				



- Prior to assembly lubricate seals, cylinder bore and rod with STP.
- Inspect all parts for scratches, nicks and gouges- -replace all damaged components.
- Inspect cylinder bore and rod for scoring- -replace if scored
- Avoid damage to seal grooves- -use a dull screwdriver for seal removal
- Torque piston nut to 110 FT/LBS. (15.3 kg-m)

CLAMP ADJUSTMENTS

CLAMP FORCE CHECK/ADJUSTMENT

1) Check water pressure. If out of operating range fill with Loron Pneumatic Fluid pump # 112909.

Note: when operating in below freezing temperatures us RV antifreeze in place of water.

2) Check the clamp force centered on lower pad.

OPEN FORCE CHECK/ADJUSTMENT

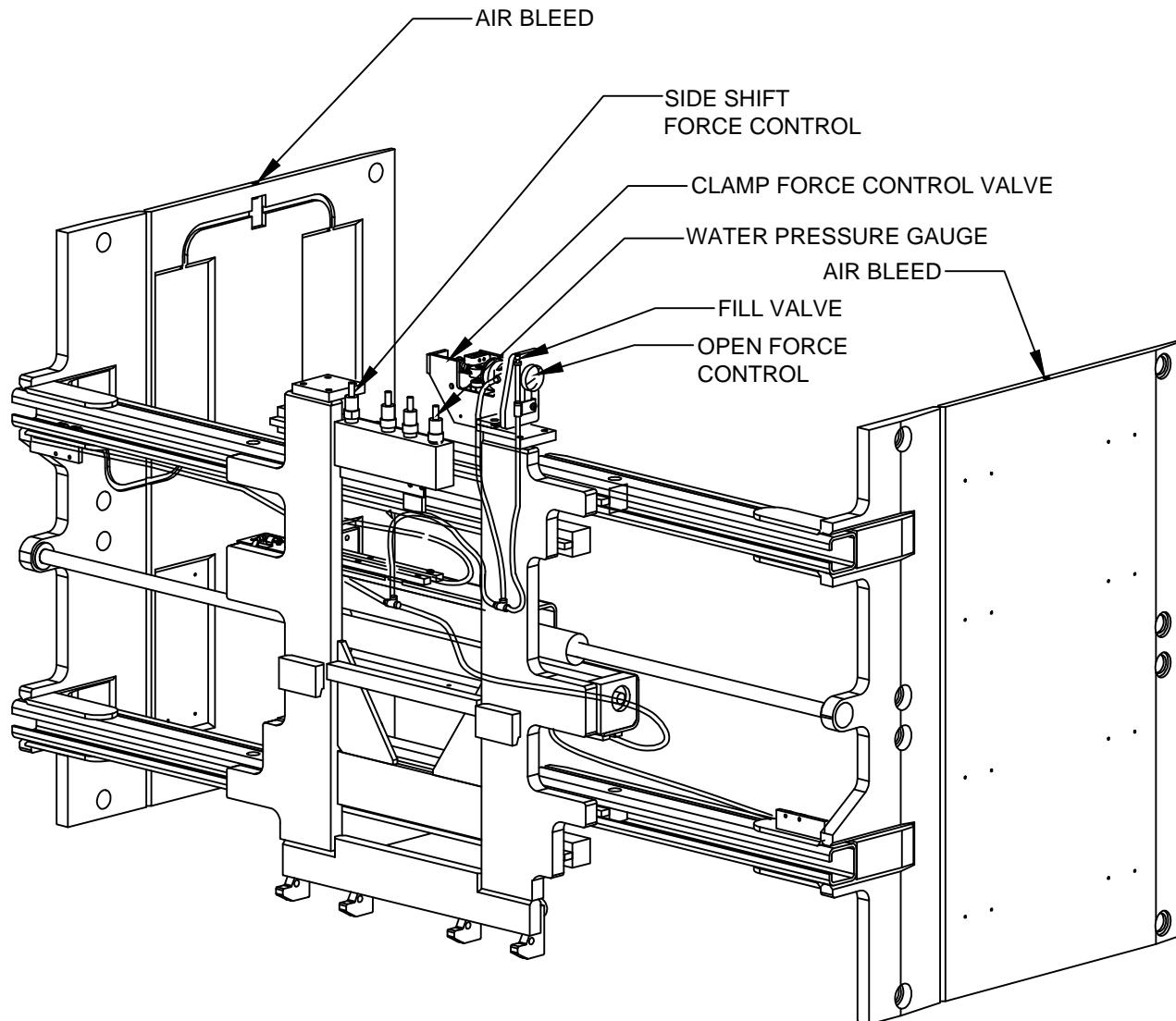
Open the arms against a force fixture and adjust for desired maximum force.

SIDE SHIFT FORCE ADJUSTMENT

1) Clamp on the heaviest load that will be handled

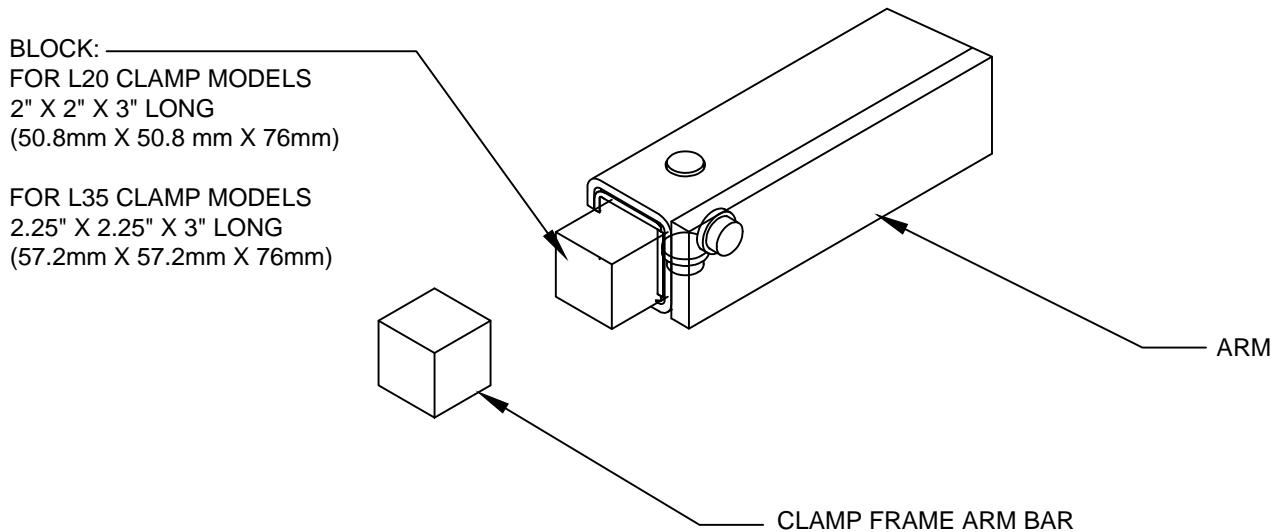
2) Adjust the side shift force down until the arms stop

3) Turn the adjusting screw one turn in.



ARM SLIDE & SHIM REPLACEMENT

1. To replace the slides extend the arms to the fully open position. Release system pressure prior to removing the arms by turning the truck off and working the side shift and clamp function controls several times.
2. Support the arm with an overhead crane or lift truck. Be sure to secure the chain or sling in a manner that prevents the arm from falling out of the chain or sling when hanging free of the clamp frame.
3. Remove the cotter pin, slotted nut and spherical bearing from the end of the clamp cylinder rod. Keeping hands and feet clear, carefully slide the clamp arm off of the clamp frame.
4. Install the arm on the clamp frame ensuring that the arm moves freely without excessive binding. If the arm is too loose or too tight add or remove shims as required. Once the clearance is satisfactory insert the cylinder rod into the cylinder anchor on the arm. Install the spherical bearing, nut and cotter pin onto the cylinder rod end. Be sure to leave .03" - .06" (.7mm to 1.5mm) clearance to allow the cylinder to "float" on its mountings (see page 14). Remove the cotter pin, slotted nut and spherical bearing from the end of the clamp cylinder rod. Keeping hands and feet clear, carefully slide the clamp arm off of the clamp frame.



5. Inspect slides and slide buttons for wear. Slides may be rotated end-for-end and re-used if excessively worn on the outer end only. Extra shims may be used to tighten operating clearance on slightly worn slides. Replace any slides worn to less than .06" (1.5mm) thick or any slide that is deeply scored or broken.
6. To aid in replacing the slides a block may be fashioned of wood or another convenient material to the dimensions shown above. The block is inserted in the end of the arm to hold the slides, shims and buttons in position while the arm is inserted over the arm bars on the clamp frame. The block is expelled out the opposite end of the arm as the arm is pushed onto the frame.
7. Prior to installing the arm the block may be used to determine the number of shims to place under the slides. Adjust the clearance between the slides and the block to provide approximately .06" (1.5mm) running clearance between the slides and arm when installed.

TROUBLE SHOOTING GUIDE

LOADS SLIPPING OR DROPPING

POSSIBLE CAUSES

1. Clamp force set too low
2. Internal leakage in cylinder.
3. Load too heavy for the clamp capacity
4. Load may not be stacked correctly or may need to be unitized
5. Bent arms or contact pads
6. Damaged / leaking hydraulic hose

SOLUTIONS

1. Adjust clamp force page 15
2. Replace cylinder seals. If tube, piston or rod is scored replace with new parts.
3. Consult factory.
4. Restack or unitize load (shrink wrap)
5. Consult factory.
6. Replace damaged hose

CRUSHING LOADS

POSSIBLE CAUSES

1. Clamp force set too high
2. Bent arms or contact pads
3. Leak in bladder system

SOLUTIONS

1. Adjusting clamp force, page 15
2. Consult factory
3. Check for leaks and repair.

ARM CHATTERING OR ERRATIC MOVEMENT

POSSIBLE CAUSES

1. Bent clamp arms
2. Nylon slides sticking
Note: Sticking slides can cause inconsistent clamp force measurements
3. Nylon slides worn, broken or missing.

SOLUTIONS

1. Consult factory
2. Clean slides if necessary, the slides are self lubricating.
3. Replace damaged slides, shims and retaining buttons.